Crew Resource Management

Situational Awareness

Assertiveness

Decision Making

Communication

Leadership

Adaptability/Flexibility

Mission Analysis

BEYOND LIMITS

We shut off the right engine,
did the checks,
but, when it came time to restart,
nothing happened.

By Capt. David de Carion, USMC

We only had a few weeks left in our six-month deployment to Iwakuni, Japan, and we were enjoying a relatively nice—for Iwakuni—Friday afternoon. The maintenance department was catching up and getting the jets ready for our departure, and we needed a Pro A on aircraft 7.

My weapon-system officer (WSO), "Gary," and I briefed, walked, and started the A card. We took off in our Hornet and headed to the Lima area, about 20 minutes out. The card went smoothly, all the way until the 15,000-foot checks—which thankfully since have been deleted.

We shut off the left engine, did our checks, and got it restarted. We shut off the right engine, did the checks, but, when it came time to restart, nothing happened. The rpm's momentarily started to increase, but then they dropped to zero—great. I turned us toward the area's exit point, started to climb, cranked the right again, and still nothing. Gary broke out the book, and I tried a third

CRM Contacts:

CRM Instructional Model Manager
NASC Pensacola, Fla.
(850) 452-2088 (DSN 922)
https://wwwnt.cnet.navy.mil/crm/

LCdr. Deborah White, Naval Safety Center
(757) 444-3520, Ext.7231 (DSN 564)
deborah.j.white@navy.mil

time to get the engine to turn over—still nothing.

We decided to try a windmill start. At 17,000 feet, I put the left throttle to mil and nosed it over. At 14,000 feet, we got a flicker on the rpm's, and, at 9,000 feet, we had 15 percent—enough to bring the throttle to idle. Finally, at 5,000 feet and 420 knots, three things happened: The bingo bug went off, we got an FCS X, and the right engine came back on-line. Gary reset the bingo bug, I reset the FCS, and we climbed to go home.

I said, "Well, I've had enough fun for one day, how about you?"

He replied, "Yeah, that's about enough excitement for me." Little did we know.

We headed back to the field, disappointed we weren't bringing back an "up" jet but glad we didn't have to declare an emergency. As we came out of the break, tower told us to check our gear; we were cleared to land. I dropped the gear, but, just when Gary was about to answer, we looked down and saw the right main didn't indicate down. Then the light in the gear handle and the gear-warning tone came on.

"You have got to be (kidding) me," Gary said. I agreed.

We told tower we only showed two gear down. They asked if we wanted to do a flyby so they could check, which we did. Tower said that not only was the right main not down and locked, it wasn't even out of the airplane—great.

We requested a climb into the delta pattern, went to half flaps, and checked our gas. We had 2,800 pounds of fuel, so we had some time. Gary already had the book out from our restart adventure, so he began to look up the procedure. I told tower we were troubleshooting but did not yet want to declare an emergency. We also told base we showed one unsafe gear, and we were going through the procedure in the delta pattern. They asked if we needed anything; we replied, "No, not yet."

Gary and I decided he'd verbally go through a few steps of the procedure and that I'd tell him what I was doing as I did it.

After two trips around the delta pattern, we had completed the unsafe-gear procedure, accelerated, decelerated, yawed, and pulled as many Gs as we could get out of a dirty Hornet going 150 to 200 knots. The gear didn't budge. To add to our annoyance, we kept getting an FCS X in one of the channels, which reset every time. We decided to continue resetting it, unless we were in the middle of doing something else but then later reset it.

Base came back and asked how it was going, and we gave them the update. We still had about 1,900 pounds left, so we again ran through the procedure, but, this time, base walked us through it from the big book. We decided to declare an emergency with tower, who already had notified the crash crew and had arranged to rig the arresting gear.

We completed the unsafe-gear procedure a second time, punctuated by the statement, "Well, that's the end of the checklist."

In earlier training sessions, our ASO had done a superb job informing us of recent Navy and Marine Corps fatalities with off-runway landings; we were aware of what could happen.

We knew it would have to be a two-gear landing, and it was going to turn out either really well or really bad.

We were down to about 1,300 pounds when base suggested we do a touch-and-go on the good gear to knock down the bad gear. Gary and I came up with a plan, told the tower what we were doing, set full flaps, did our new version of a landing checklist, and came in for a touch-and-go. I told him if anything started to go wrong, or if either of us didn't like where it was going, I would get us up and out of there as quickly as possible.

We did a min-sink-rate approach, and I kept up the power to give the control surfaces more authority. As the left wheel touched down, I held off the right tank (we were double bubble) with aileron. We rolled for about 1,500 feet and took off again. Our right main still showed unsafe, which tower confirmed. I did, however, have a better feeling of how the jet was going to

We had run out of time and gas, and it was time to land on our two good gear and right wing tank.

behave on just one wheel.

We had run out of time and gas, and it was time to land on our two good gear and right wing tank. We told tower we would try an arrested landing. We turned back around and set up for a low, long approach. Again, we came up with a game plan in case either of us felt things weren't going right. If we boltered, we were going to take it around. I told Gary I wasn't going to use the brake, just the nosewheel steering, because one wheel wouldn't be turning, and the other one would. We briefly discussed taking the gear off-center to compensate for the extra drag on the right side, but we decided against adding another variable to our problem. Base reminded us to safe our seats before unstrapping—good idea.

The approach went smoothly, but I set down a little too far away from the A-gear, and couldn't hold the right tank off the ground long enough. I used to believe when someone was telling me what they were thinking during an emergency or high-pressure situation, it was organized and orderly. I now know differently. As the tank began to skid on the runway, my reaction was, "Tank on ground, still controllable, gear's up ahead, not good to drag tank across A-gear, get airborne!"

I got it back in the air before we got to the A-gear. We were at 850 pounds. I told tower and base what had happened, and we were going to try again.

On downwind, we decided if this attempt wasn't successful, we'd run out of gas before we had a chance for another attempt. We probably would eject over water.

This time, as we rolled into the groove, I held a little more airspeed. We felt the hook start to drag about 1,200 feet from the gear. I kept up the power to keep the tank off the ground, and the left main touched down about 50 feet before the gear. When the hook grabbed the cable, I couldn't hold the wing off the ground anymore, so we settled onto the left main, right tank, and

right front-nosegear. We slid toward the right side of the runway, but our jet still was controllable with the nosewheel.

After what seemed like an eternity, we finally came to rest about 20 feet from the runway edge and 40 feet from the grass. As I safed my seat, I said, "Safe in the front," and

Gary replied, "Safe in the rear."

I pulled off the throttles, opened the canopy, pressed both fire lights, turned off the battery, unstrapped, and climbed out onto the left wing, jumped onto the left wing tank, and then to the ground, closely followed by Gary; both us were glad to have made it.

Many things could have gone wrong, but everything went right for us that day. Iwakuni tower did an outstanding job of alerting the crash crew and getting things prepared for us. If they asked us for something, and we told them to standby, they waited patiently until we could get back to them. They let us know when everything was prepared and waiting, and they didn't clobber the radio with extra chatter.

Base also was extremely helpful, only giving us what we needed to know. Neither Gary nor I would have thought to safe our seats after we stopped. Base had sent an LSO out to the end of the runway for us, but he chose to keep himself out of the problem, which was the right thing to do.

Gary and I had a plan each time we went around. We communicated that plan to tower and base, who let us execute without interjecting comm calls and unnecessary questions or info.

In the end, the only damage the jet sustained was to the right external tank. The right aileron was only inches off the ground but never touched. I never again will complain about being double bubble.

As we filled out our yellow sheet later that evening, I wrote a MAF, "Right main-landing tank worn beyond limits."

Capt. de Carion (pilot) and Capt. Matthew Desmond, USMC, (WSO) flew with VMFA (AW)-225.

This Hornet crew displayed sound crew-resource-management skills, not only in the aircraft but by using outside sources, as well. Several questions come to mind. How many times would you try to restart an engine? How many times should you? Is the jet trying to tell you something?

After the jet is on deck, the crew is safe (with a change of flight suits and underwear), and the sea story has been told and written, the job still is incomplete. Why did the engine not start? Why did the landing gear fail to extend? And finally, when those questions are answered, does the rest of the community know the reasons?—Capt. Ken Neubauer, Director, Aviation Safety Programs, Naval Safety Center.